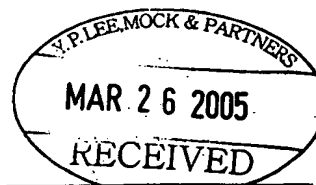


## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference SH-18952-PCT	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/KR2003/002192</b>	International filing date (day/month/year) <b>20 OCTOBER 2003 (20.10.2003)</b>	Priority date (day/month/year) 2 OCTOBER 2002 (20.10.2002)
International Patent Classification (IPC) or national classification and IPC  <b>IPC7 G03F 1/08</b>		
Applicant  <b>SAMSUNG ELECTRONICS CO., LTD. et al</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 15.



2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT)

These annexes consist of a total of \_\_\_\_\_ sheets.

☐ This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 15(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  <b>07 MAY 2004 (07.05.2004)</b>	Date of completion of this report  16 MARCH 2005 (16.03.2005)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer  SHIN, JU CHEOL Telephone No. 82-42-481-8156 

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR200□002192

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☐ the description: \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the claims: \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the drawings: \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description: \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.  
These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is

- ☐ the language of a translation furnished for the purposes of international search (under Rule 2□1(b□□
- ☐ the language of publication of the international application (under Rule 48.□(b□□
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.□□

☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets \_\_\_\_\_

5. ☐ This report has been established as if (some of □ the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c□□\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION

International application No.

PCT/KR2000/002192

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N <input type="checkbox"/> )	Claims	1-19	YES
	Claims		NO
Inventive step (IS <input type="checkbox"/> )	Claims	1-19	YES
	Claims		NO
Industrial applicability (IA <input type="checkbox"/> )	Claims	1-19	YES
	Claims		NO

**2. Citations and explanations (Rule 70.7 ☐)**

1. Claims 1-19 of the present invention relate to a pattern forming materials comprising: a thermal sensitive material layer formed on a target substrate; a first light-to-heat converting layer formed between the thermal sensitive material layer and the target substrate; and a second light-to-heat converting layer formed on a surface of the thermal sensitive material layer opposite to the first light-to-heat converting layer, wherein the thermal sensitive material layer is interposed between the first and second light-to-heat converting layers.

2. Reference is made to the following documents:

D1: WO98/47142 A1  
D2: JP1993-342629 A  
D3: JP 1999-203724 A  
D4: JP2000-215510 A  
D5: JP2000-343826 A  
D6: JP1987-53886 A

Document D1, which is considered to represent the most relevant state of the art, provides a crystallization-accelerating layer comprising a given material is formed over a substrate on one side thereof, and a recording layer comprising a Ge-Sb-Te alloy is formed directly on the layer. Since the recording layer crystallizes immediately after film formation, no initialization step is necessary for the optical information recording medium obtained. Examples of the material of the crystallization-accelerating layer firstly include substances having a face-centered cubic lattice crystal structure.

Also, each of documents D2-D6 discloses a optical disk or recording media using crystallization of Sb-Te alloy system, however, these documents define the general state of the art which is not considered to be of particular relevance.

(Continued on Supplemental Box)

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR200□002192

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient□)

Continuation of:

Box V

## 3. Novelty

Each of documents D1-D6 discloses recording medium using crystallization from which claim 1 of the present invention differs in that the pattern forming materials is comprised of a thermal sensitive material layer and a first light-to-heat converting layer. Therefore, the novelty of the subject matter of claim 1 can be acknowledged under PCT Article 33(2). Claims 2-19, which are dependent on or related with claim 1, also meet the requirements of PCT Article 33(2) with respect to Novelty.

## 4. Inventive step

Claim 1 of the present invention relates to a pattern forming materials comprising: a thermal sensitive material layer formed on a target substrate; a first light-to-heat converting layer formed between the thermal sensitive material layer and the target substrate; and a second light-to-heat converting layer formed on a surface of the thermal sensitive material layer opposite to the first light-to-heat converting layer, wherein the thermal sensitive material layer is interposed between the first and second light-to-heat converting layers.

The specific structure of the pattern forming materials of the present invention can not be easily derived from the modification in the D1-D6 within the scope of the customary practice followed by persons skilled in the art. Moreover, the advantages such as having a fine pattern cannot readily be foreseen. Consequently, the subject matter of claims 1 of the present application is considered as involving an inventive step under PCT Article 33(3). Claims 2-19, which are dependent on or related with claim 1, also meet the requirements of PCT Article 33(3) with respect to inventive step.

## 5. Industrial applicability

No opinion will be formulated with respect to the industrial applicability of this subject matter such as pattern forming materials for fine pattern. (PCT Article 33(4)).